



## ABSTRACT OF THE DISCLOSURE

An optical waveguide designed to generate positive dispersion when operated in a high order mode. The optical waveguide in one embodiment is  
5 designed to generate positive dispersion slope, in another embodiment to generate negative dispersion slope and in yet another embodiment nominally zero dispersion slope. In one embodiment the high order mode is the  $LP_{02}$  mode and in another embodiment the high order mode is the  $LP_{03}$  mode. In another embodiment the optical waveguide is a few mode fiber. In an  
10 exemplary embodiment the optical waveguide is used in combination with a mode transformer, such as a transverse mode transformer to achieve the desired high order mode.

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